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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,114	04/16/2004	Hiroyuki Kitsunai	500.40633VX1	7716

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/825,114

Applicant(s)

KITSUNAI ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 3-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (EP 0709877 A1) in view of Pirkle et al (US Patent No. 5,846,373).

Saito et al teach a plasma etching apparatus (Fig. 1) comprising: an etching chamber 11 (etching treatment room); an electrostatic substrate stage 21, for placing a semiconductor substrate 20 thereon, installed in the etching treatment room 11; a magnetron 16 (plasma generating means) for generating plasma in the etching treatment room; and a gas inlet including a flow-rate controller 15 (gas introducing means) for introducing an etching gas into the etching chamber 11 (column 3, lines 11-43) and adapted to discharge charges stored,

wherein an etching gas such as HBr is supplied for an etching process (a treating gas for etching) and a cleaning gas such as O₂ is supplied for removing reaction product deposits inside the chamber (a treating gas for decomposing and removing etching products) (column 3, line 44 through column 4, line 19).

Saito et al disclose cooling for substrate through electrostatic chuck and also disclose temperature of the wafer as a result effective process parameter (page 5 lines 41-43) but do not explicitly disclose temperature control of the substrate stage and structure of gas input specially showerhead holes.

Saito et al fail to teach a monitoring device (means) for monitoring a retained amount of etching products.

Pirkle et al teach a plasma processing apparatus (Figs. 1A, 1B) for multi step process on a substrate clamped electrostatically on a stage which has temperature control (Col 4 lines 44-47, Col 5 lines 20-35) and comprising a photo-detectors 48, 50 for monitoring emission intensity of light emitted during a processing step such as during in-situ cleaning step (column 5, line 66 through column 6, line 54). Pirkle et al further teach that the gas inlet could have showerhead holes (Col 5 lines 35-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the monitoring system and to use showerhead holes as taught by Pirkle et al in the apparatus of Saito et al in order to monitor the status of the processing during an etching or a cleaning step.

Alternatively, multi step process could be used in Pirkle et al since all needed structure is disclosed in Pirkle et al.

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Regarding temperature control it would be obvious to one of ordinary skill in the art at the time of invention to have temperature control as per the teaching of Pirkle et al in order to have consistent process as temperature control is a parameter affecting plasma etch or deposition process.

Further regarding the substrate being etched during the two process step: the gas sources in the apparatus of Saito et al are controlled separately, thus, the gas sources are capable of being controlled such that the gas sources introduce a gas composition comprising HBr in a first step and introduce a gas composition comprising HBr and O₂ in a next step.

Newly added claims 8, 9 and 11-12 recite an intended use of the temperature control and do not have any patentable weight.

It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); “Apparatus claims cover what a device is, not what a device does” (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

Response to Arguments

Applicant's arguments filed 11/10/2005 have been fully considered but they are not persuasive.

In the their arguments Applicants continue to rely on functional limitations of these claims and argue that in Saito cleaning step is conducted separately from the etching treatment.

As has been discussed above, the apparatus claims must be distinguished from the prior art in terms of structure rather than function. As Saito discloses multi step etch and plurality of gases it has been disclosed beyond doubt that the apparatus as disclosed is capable of the claimed function.

Applicant argues that temperature control is not disclosed in Pirkle et al since temperature cannot be raised where desirable.

This however is not commensurate with the scope of the claim according to not only the plain meaning of the claim but also as read in the light of the specification. It is noted that the Applicant has not disclosed where in the specification temperature is raised by temperature control. As discussed above, Pirkle et al disclose temperature control as in the specification.

It is noted that in response to applicant's argument regarding claims 8, 9, 11 and 12 all the limitations are considered but no weight is given to intended use limitations. Similarly gas introducing means are considered as discussed above in the rejection.

Further Qian et al (US 6699399) was made of record as pertinent to applicant's disclosure.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar
Primary Examiner AU 1763